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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/705,661	11/03/2000	Kazuto Okazaki	4296-123	6250

7590 07/14/2004

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EXAMINER

RIDLEY, BASIA ANNA

ART UNIT	PAPER NUMBER
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1764

DATE MAILED: 07/14/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/705,661	Applicant(s) OKAZAKI ET AL.	
	Examiner Basia Ridley <i>BR</i>	Art Unit 1764	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 9/18/03, 11/10/03 and 1/19/04.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 8-14 is/are pending in the application.
- 4a) Of the above claim(s) 11-13 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 8-10 and 14 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 August 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|--|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input checked="" type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. <u>040204</u> . |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____. | 6) <input type="checkbox"/> Other: _____. |

DETAILED ACTION

1. In view of the preliminary amendment filed on 19 January 2004 the Office action mailed on 29 January 2004 is vacated, see attached interview summary dated 2 April 2004.

Response to Amendment

2. The applicant is reminded about the requirements of revised 37 CFR 1.121 (68 Fed. Reg. 38611 (June 30, 2003)). Specifically, applicant is reminded that only the following seven status identifiers must be used to indicate the status of claims in the application: (original), (currently amended), (canceled), (withdrawn), (new), (previously presented) and (not entered).

Drawings

3. The drawings were received on 18 August 2003. These drawings are not acceptable for the following reasons:

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because Fig. 2 does not include "line 100" as mentioned on page 10, line 3 of the specification.

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because Fig. 2-3 include the following reference character(s) not mentioned in the description: 101.

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because Fig. 1-3 do not include "the acrylic acid-containing gas 20 emanating from the reactor 4" as mentioned on page 23, lines 4-5 of the specification.

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because Fig. 1-3 do not include "line 2" as mentioned on page 31, lines 20-21 of the specification.

The drawing(s) is/are objected to as failing to comply with 37 CFR 1.84(q) because Fig. 2 contain(s) lead lines without corresponding reference numbers.

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The drawing(s) are objected to as failing to comply with 37 CFR 1.84(q) because reference characters 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111 and 112 in Fig. 2-3 are lacking lead lines between themselves and the details which they are referring to. It is not always clear which process line is indicated by which reference number.

Corrected drawing sheets, or amendment to the specification to add the reference character(s) in the description, are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

4. The disclosure is objected to because of the following informalities:
- page 14, lines 9-10 "circulation cooler attached to the acrylic acid absorbing column," should be replaced with --circulation cooler 9 attached to the acrylic acid absorbing column 5,--;
 - page 16, line 20 "refining column," should be replaced with --refining column 7,--;
 - page 18, paragraph 2, line 9 (as amended on 18 August 2003) "line 6" should be replaced with "line 106";
 - page 27, line 2 "chilled coolant to the evaporator 3" should be replaced with --chilled coolant from the evaporator 3--;
 - page 29, line 21 "thermocooler 26" should be replaced with --thermocooler 23--.

Appropriate correction is required. Applicant is reminded that no new matter shall be added.

Claim Rejections - 35 USC § 103

5. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

6. Claim(s) 8-10 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Admitted Prior Art (as shown in Fig. 1 of instant specification and as described on P1/L15-P5/L29) in view of Oswalt et al. (USP 4,769,998).

Regarding claim(s) 8-10, Admitted Prior Art disclose(s) similar apparatus for production of acrylic acid or acrolein comprising:

- an evaporator (3) for gasifying liquefied propylene and/or propane (14);
- means (24) for supplying a coolant (17) to said evaporator (3);
- means (3) for chilling the coolant (17) in the evaporator (3) by recovering latent heat of the liquefied propylene and/or propane (14) (P3/L19-25);
- means (4) for subjecting resultant gasified propylene and/or propane to a catalytic gas phase oxidation reaction thereby preparing a gas containing acrylic acid or acrolein (Fig. 1);
- wherein said means (3) chilling the coolant (17) includes means (24) for adjusting the temperature of said coolant (17) or means for adjusting a flow amount thereof (Fig. 1).

Admitted Prior Art discloses that a coolant supplied to said evaporator is chilled by evaporating liquefied propylene and/or propane (Fig. 1) and the reference discloses that said apparatus comprises various heat exchangers which use a liquid coolant (Fig. 1 and P2/L24-P3/L18). The reference does not explicitly disclose that said chilled coolant can be used in said heat exchangers in the apparatus and later re-circulated back to the evaporator.

Oswalt et al. teaches that it is known to prepare a process coolant, which can be used as a coolant in heat exchangers in various processes (C1/L9-19), by passing a liquid coolant through an

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evaporator (6). Chilled coolant from said evaporator (6) is used in various processes and spent process coolant is being re-circulated back to the evaporator (6).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a liquid coolant in the evaporator of Admitted Prior Art to prepare a chilled coolant and to use said chilled coolant in heat exchangers in the apparatus for production of acrylic acid or acrolein, as taught by Oswald et al., for the purpose improving operation efficiency. Said modification would merely amount to using an available coolant rather than a coolant which has to be prepared in auxiliary process, therefore saving an operation cost of said auxiliary process.

While the references disclose that said coolant can be used to control temperature of various processes, including chemical reactions (Oswald et al. C1/L9-19 and C6/L63-32), the references do not explicitly disclose any specific temperatures for liquid coolant before or after said coolant is passed through the evaporator. As the temperature at which chemical reactions are being conducted is a variable that can be modified, among others, by adjusting the temperature of coolant used to remove heat from said chemical reactions, with said reactions temperature decreasing as the temperature of the coolant is decreased, the precise temperature of the coolant (at any point of the process) would have been considered a result effective variable by one having ordinary skill in the art at the time the invention was made. As such, without showing unexpected results, the claimed coolant temperatures cannot be considered critical. Accordingly, one of ordinary skill in the art at the time the invention was made would have optimized, by routine experimentation, the coolant temperatures at various process stages in the apparatus of Admitted Prior Art in view of Oswald et al. to maintain the desired temperature of chemical reaction conducted in said apparatus (*In re Boesch*, 617 F.2d. 272, 205 USPQ 215 (CCPA 1980)), since it has been held that where the general conditions of the claim are disclosed in the prior art, discovering the optimum or workable ranges

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involves only routine skill in the art. (*In re Aller*, 105 USPQ 223).

Regarding claim(s) 14, Admitted Prior Art disclose(s) similar apparatus for production of acrylic acid or acrolein comprising:

- an evaporator (3) for gasifying liquefied propylene and/or propane (14);
- means (24) for supplying a coolant (17) to said evaporator (3);
- means (3) for chilling the coolant (17) in the evaporator (3) by recovering latent heat of the liquefied propylene and/or propane (14) (P3/L19-25);
- wherein said means (3) chilling the coolant (17) includes means (24) for adjusting the temperature of said coolant (17) or means for adjusting a flow amount thereof (Fig. 1);
- means (4) for subjecting resultant gasified propylene and/or propane to a catalytic gas phase oxidation reaction thereby preparing a gas containing acrylic acid or acrolein (Fig. 1).

Admitted Prior Art discloses that a coolant supplied to said evaporator is chilled by evaporating liquefied propylene and/or propane (Fig. 1) and the reference discloses that said apparatus comprises various heat exchangers which use a liquid coolant (Fig. 1 and P2/L24-P3/L18). The reference does not explicitly disclose that said chilled coolant can be used in said heat exchangers in the apparatus and later re-circulated back to the evaporator.

With respect to Oswalt et al. the same comments apply as set forth above.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35

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U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

Response to Arguments

8. Applicant's arguments filed on 18 September 2003 and 19 January 2004 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

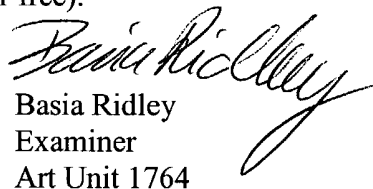
9. In view of the foregoing, none of the claims are allowed.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to examiner Basia Ridley, whose telephone number is (571) 272-1453.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola, can be reached on (571) 272-1444.

The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Technical Center 1700 General Information Telephone No. is (571) 272-1700. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Questions on access to the Private PAIR system should be directed to the Electronic Business Center (EBC) at (866) 217-9197 (toll-free).


Basia Ridley
Examiner
Art Unit 1764

BR
July 9, 2004